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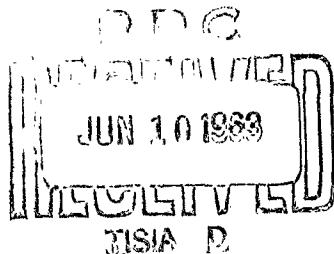
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E. D. Palik

Semiconductors Branch
Solid State Division

April 1963



U. S. NAVAL RESEARCH LABORATORY
Washington, D.C.

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Preface

The following bibliography is arranged in chronological order by years. For a given year, the articles are alphabetized by first author's last name. The information given is authors, title of paper and reference.

This far infrared bibliography includes papers which deal primarily with infrared spectroscopy between 25 and 1000μ . There are papers dealing with various aspects of instrumentation which are necessary in the far infrared spectral region. There are papers describing the use of far infrared radiation for studying many kinds of physical phenomena, such as vibration-rotation bands and rotation bands of gases, vibration bands of liquids and solids, optical constants of solids, impurity spectra of semiconductors, cyclotron resonance in solids, properties of superconductors, etc. Some papers which describe techniques that have eventually found widespread use in far infrared spectroscopy are included for historical interest. Some papers describe studies using optical techniques which overlap into the microwave region. The investigations described in some papers covered both the near and far infrared. Since 25μ is a somewhat arbitrary dividing line, it is difficult to omit these papers. A few dissertations, abstracts and final progress reports are included because they often contain useful information not published elsewhere. Also, a few books are cited.

For historical interest, an attempt has been made to include all the papers of Rubens. His work progressed naturally from the near infrared to the far infrared.

A list of the journal abbreviations used are given. There are cross reference sections by author and by subject matter.

There is one graph illustrating the growth of research in the far infrared spectral region.

Several bibliographies in books and articles have proved helpful. Among these are: "Infrared Spectroscopy", by R.B. Barnes, R.C. Gore, U.Liddel and V.Z. Williams, Reinhold Publishing Corp., New York, 1944; Infrared, a bibliography, Part I by C.R. Brown, M.W. Ayton, T.C. Goodwin, and T.J. Derby, The Library of Congress, Technical Information Division, Washington, D.C., 1957; "Analytical Applications of Far Infrared Spectra. I. Historical Review, Apparatus and Techniques", by F.F. Gentley, E.F. Wolfarth, N. Srp and W.R. Powell, Spectrochim. Acta, 13:1, 1958; Biographisch-literarisches Handwörterbuch der Exakten Naturwissenschaften, vol. VIIa, Suppl., J.C. Poggendorff, Akademie - Verlog, Berlin, 1960.

I would like to express my appreciation to several people who helped in the information and growth of this bibliography since its start in 1954 at the Ohio State University. They are R.A. Oetjin, E.E. Bell, H. Yoshinaga, R. Rowntree, M. Hass, L. Genzel.

JOURNAL ABBREVIATIONS

| | |
|--|--|
| Acta Physicochim. URSS - Acta Physicochimica URSS | J. Mol. Spectr. - Journal of Molecular Spectroscopy |
| Amer. J. Phys. - American Journal of Physics | J. Opt. Soc. Amer. - Journal of the Optical Society of America |
| Amer. J. Sci. - American Journal of Science | J. Phys. Chem. - Journal of Physical Chemistry |
| Amer. Phys. Teach. - American Physics Teacher | J. Phys. Soc. Japan - Journal of the Physical Society of Japan |
| Ann. Physik - Annalen der Physik | J. Phys. Chem. Solids - Journal of the Physics and Chemistry of Solids |
| Ann. Chim. Phys. - Annales de Chimie et de Physique | J. Phys. Rad. - Journal de Physique et le Radium |
| Ann. Phys. Paris - Annales de Physique Paris | J. Phys. Theor. Appl. - Journal de Physique Theorique et Appliquee |
| Appl. Opt. - Applied Optics. | J. Quant. Spectr. Rad. Transfer - Journal of Quantitative Spectroscopy and Radiative Transfer |
| Astrophys. J. - Astrophysical Journal | J. Res. Natl. Bur. Stand. - Journal of Research of the National Bureau of Standards |
| Cah. Phys. - Cahiers de Physique | J. Sci. Instr. - Journal of Scientific Instruments |
| Compt. Rend. - Comptes Rendus | |
| Compt. Rend. Acad. Sci. URSS - Comptes Rendus de L'Academie des Sciences de l'URSS | |
| Cryogenics | |
| Disc. Far. Soc. - Discussions of the Faraday Society | Nature |
| Dokl. Akad. Nauk - Doklady Akademii Nauk (Sov. Phys. Dokl. - Soviet Physics Doklady) | Naturwiss. - Naturwissenschaften |
| The Electrician | Naturw. Rdsch. - Naturwissenschaftliche Rundschau |
| Electrotech. Z. - Electrotechnische Zeitschrift | Nernstfestschrift |
| Ergebn. Exakt. Naturwiss. - Ergebnisse der Exakten Naturwissenschaften | Nuovo Cimento Suppl. - Nuovo Cimento Supplemento |
| Geiger - Sheels Handbuch der Physik | |
| Infrared Phys. - Infrared Physics | Optica Acta |
| Int. Conf. Spect. 7th Liege 1958 Proc. International Conference on Spectroscopy 7th, Leige 1958 Proceedings | Optik |
| Inzh.-Fiz. Zhur. - Inzhenerno Fizicheskiy Zhurnal | Opt. i Spektr. - Optika i Spektroskopija (Optics and Spectroscopy) |
| Izvest. Akad. Nauk - Izvestiya Akademii Nauk (Bull. Acad. Sci. - Bulletin of the Academy of Sciences USSR) | |
| Jahr. Radioak. Elekt. - Jahrbuch der Radioaktivitat und Elektronik | Phil. Mag. - Philosophical Magazine |
| Japan J. Appl. Phys. - Japan Journal of Applied Physics | Physica |
| J. Amer. Chem. Soc. - Journal of the American Chemical Society | Phys. Rev. - Physical Review |
| J. Chem. Educ. - Journal of Chemical Education | Phys. Rev. Letters - Physical Review Letters |
| J. Chem. Phys. - Journal of Chemical Physics | Phys. Z. - Physikalische Zeitschrift |
| | Phys. Z. Sowjetunion - Physikalische Zeitschrift der Sowjetunion |
| | Proc. Natl. Acad. Sci. - Proceedings of the National Academy of Sciences |
| | Proc. Phys. Soc. (London) - Proceedings of the Physical Society (London) |
| | Proc. Roy. Soc. (London) - Proceedings of the Royal Society (London) |
| | Quar. J. Roy. Meteorol. Soc. - Quarterly Journal of the Royal Meteorological Society |
| | Le Radium |

| | |
|---|---|
| Rapport du Congrès International de Physique | Journal of Experimental and Theoretical Physics USSR) |
| Repts. Progr. Phys. - Reports of Progress in Physics | |
| Rev. Sci.Instr. - Review of Scientific Instruments | |
| Rev. Phys.Chem. Japan - Review of Physical Chemistry, Japan | |
| Revs. Mod. Phys. - Reviews of Modern Physics | |
| Rev. Opt. - Revue d'Optique | |
| Rev. Gen.Sci. Pur. Appl. - Revue Generale des Sciences Pures et Appliquees | |
| Sci. Light (Japan) - Science of Light | |
| Sci. Repts. - Tohoku Univ. - The Science Reports of the Research Institutes, Tohoku University - | |
| Séances Soc. Franc. Phys. - Séances de la Societe Francaise de Physique | |
| SERL Tech. J. - SERL Technical Journal | |
| Berl. Ber. - Sitzungsberichte der Koniglich Preussischen Akademie der Wissenschaften zu Berlin | |
| Smith. Rept. - Smithsonian Annual Report | |
| Spectrochim. Acta - Spectrochimica Acta | |
| Trans. Far.Soc. - Transactions of the Faraday Society | |
| Uspekhi Fiz. Nauk - Uspekhi Fizicheskikh Nauk (Prog. Phys. Sci. USSR - Progress in Physical Sciences USSR) | |
| Verh. Deut. Phys. Ges. - Verhandlungen die Deutsche Physikalische Gesellschaft | |
| Verh. Ges. D. Naturf. Ärzte - Verhandlungen der Gesellschaft Deutscher Naturforscher und Ärzte | |
| Wied. Ann. - Wiedemann Annalen der Physik und Chemie | |
| Z. Angew. Physik - Zeitschrift für Angewandte Physik | |
| Z. Elektrochem. - Zeitschrift für Elektrochemie und Angewandte Physikalische Chemie | |
| Z. Instr. - Zeitschrift für Instrumentenkunde | |
| Z. Naturforsch. - Zeitschrift für Naturforschung | |
| Z. Physik - Zeitschrift für Physik | |
| Z. Phys. Chem. Unterr. - Zeitschrift für Physikalischen und Chemischen Unterricht | |
| Zhur. Eksp. i Teoret. Fiz. - Zhurnal Eksperimental noi i Teoreticheskoi Fiziki (J. Exp. Theor. Phys. USSR - | |

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To avoid the work involved in thoroughly indexing this bibliography, the subject information contained here was obtained primarily from the title of the paper. Therefore, the section entitled spectrometers contains references to some of the more obvious works, although many papers contain descriptions of spectrometers. Also, there were some problems assigning a paper to a subject, especially in section V. Optical properties of solids, where, for example, a paper on lattice vibrations of alkali halides may be found under lattice vibrations, reststrahlen, dispersion or transmission.

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 b. Various compounds - 461, 515
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2. Reflection, transmission, absorption

a. Specific compounds:
 Water-H₂O - 115, 116, 120, 251, 260, 384, 601, 606, 607
 Heavy water-D₂O - 252, 260, 606
 Sulfuric acid-H₂SO₄ - 259
 Ethyl alcohol-C₂H₆O - 117
 α, β picoline-C₆H₄NCH₃ - 253
 b. Various compounds - 53, 158, 254, 389
 c. Polar, non-polar liquids - 254, 258, 261, 267

V. Optical Properties of Solids:

1. Reststrahlen

a. General - 68, 189, 205, 232, 233, 305, 399, 425, 592
 b. Specific compounds:

Lithium fluoride-LiF - 198, 228, 269, 422, 473, 477, 541
 Sodium fluoride-NAF - 220, 228, 269, 477, 594, 637
 Sodium chloride-NaCl - 50, 52, 54, 56, 112, 125, 126, 127, 150, 168, 205, 218, 222, 228,
 234, 241, 518, 545, 547, 592, 594, 637
 Sodium bromide-NaBr - 228
 Sodium iodide-NaI - 228

- Potassium chloride-KCl - 40, 41, 50, 54, 56, 125, 126, 127, 150, 205, 222, 228, 241, 244, 518, 547, 637
 Potassium bromide-KBr - 125, 126, 127, 228, 244, 518, 637
 Potassium iodide-KI - 125, 126, 127, 228
 Rubidium chloride-RbCl - 198, 228
 Rubidium bromide-RbBr - 228
 Rubidium iodide-RbI - 228
 Cesium chloride-CsCl - 228
 Cesium bromide-CsBr - 228, 388, 637
 Cesium iodide-CsI - 482, 637
 Thallium fluoride-TlF - 220, 228
 Thallium chloride-TlCl - 157, 228, 388, 414, 594, 637
 Thallium bromide-TlBr - 157, 388, 637
 Thallium iodide-TlI - 157, 388
 Krystall, Synthetisch no. 5-KRS-5 - 313, 594, 637
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 Silver Chloride-AgCl - 150
 Silver bromide-AgBr - 150
 Gallium phosphide-GaP - 547, 629
 Indium phosphide-InP - 480, 519, 629
 Gallium arsenide-GaAs - 519, 570, 629
 Indium arsenide-InAs - 519, 629
 Aluminum antimonide-AlSb - 519, 629
 Gallium antimonide-GaSb - 519
 Indium antimonide-InSb - 414, 440, 629
 Lead sulfide-PbS - 388, 414
 Lead selenide-PbSe - 414
 Zinc oxide-ZnO - 502
 Zinc sulfide-ZnS - 388, 414
 Cadmium telluride-CdTe - 591
 Calcium fluoride-CaF₂ - 58, 81, 212, 581, 633, 637
 Strontium fluoride-SrF₂ - 220, 633
 Barium fluoride-BaF₂ - 220, 633
 Lead chloride-PbCl₂ - 388
 Calcium carbonate-CaCO₃ - 136, 390
 Barium carbonate-BaCO₃ - 112
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 Ammonium chloride-NH₄Cl - 112, 157
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 a. General - 232, 233, 399, 592
 b. Specific compounds:
 Lithium fluoride-LiF - 620
 Sodium chloride-NaCl - 228, 546, 563
 Sodium bromide-NaBr - 228, 563
 Sodium Iodide-NaI - 228, 563
 Potassium chloride-KCl - 228, 546, 563
 Potassium bromide-KBr - 228, 563
 Potassium iodide-KI - 228, 563
 Rubidium chloride-RbCl - 563
 Rubidium bromide-RbBr - 563
 Rubidium iodide-RbI - 563
 Cesium chloride-CsCl - 563
 Cesium bromide-CsBr - 563

Thallium chloride-TlCl - 563
 Thallium bromide-TlBr - 563
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 Silver bromide-AgBr - 563
 Indium antimonide-InSb - 537
 Gallium arsenide-GaAs - 570
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 Zinc selenide-ZnSe - 478
 Zinc telluride-ZnTe - 478
 Cadmium sulfide-CdS - 478, 617
 Cadmium selenide-CdSe - 478
 Cadmium telluride-CdTe - 478
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 Mercurous chloride-Hg₂Cl₂ - 574
 Potassium dihydrogen phosphate-KH₂PO₄ - 575
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 Potassium dihydrogen arsenate-KH₂AsO₄ - 575

3. Dispersion:

a. General - 26, 27, 28, 30, 159, 189, 205, 305, 528, 565

b. Specific compounds:

Lithium fluoride-LiF - 422, 473, 477, 528, 620
 Sodium fluoride-NaF - 477
 Sodium chloride-NaCl - 17, 18, 22, 45, 56, 113, 205, 212, 234, 511, 528, 592, 621
 Potassium chloride-KCl - 18, 22, 45, 56, 113, 205, 511
 Potassium bromide-KBr - 235, 511
 Potassium iodide-KI - 235
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 Cesium bromide-CsBr - 528, 626
 Calcium fluoride-CaF₂ - 18, 22, 25, 581, 626
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c. Various compounds - 166

4. Transmission, optical constants, physical properties:

a. Specific compounds:

Lithium fluoride-LiF - 328, 422, 473, 477
 Sodium fluoride-NaF - 477
 Sodium chloride-NaCl - 33, 45, 212, 328, 544, 546, 554, 592
 Potassium chloride-KCl - 33, 45, 198, 244, 316, 546, 554
 Potassium bromide-KBr - 244, 328, 544, 554
 Potassium iodide-KI - 544
 Cesium bromide-CsBr - 334, 335, 346, 554
 Cesium iodide-CsI - 348, 355, 482, 554, 625

- Thallium chloride-TlCl - 316
 Thallium bromide-TlBr - 316
 Krystall synthetisch no.5-KRS-5 - 309, 313, 316, 325, 335, 554
 Calcium fluoride-CaF₂ - 35, 58, 581
 Lead chloride-PbCl₂ - 316
 Silver chloride-AgCl - 309
 Germanium-Ge - 341, 402, 542, 625
 Silicon-Si - 341, 457, 542
 Tellurium-Te - 501
 Selenium-Se - 501
 Sulfur-S - 227
 Indium antimonide-InSb - 396, 411, 440, 537
 Gallium arsenide-GaAs - 570
 Aluminum oxide-Al₂O₃ - 628
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 Titanates-Ba, Sr, Pb, Ca, Cd, Mg, Zn(BaTiO₃, etc.) - 446, 631
 Quartz - 35, 37, 38, 125, 150, 227, 240, 279, 328, 539, 542, 572, 601, 625, 645
 Sapphire - 588, 645
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- a. Specific compounds:
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 - Silicon-Si - 414
 - Aluminum oxide-Al₂O₃ - 628
 - Beryllium oxide-BeO - 618
 - Titanates-Ba, Sr, Ca, Mg(BaTiO₃, etc.) - 363, 601, 613
 - Metals - 2, 4, 5, 36, 47, 57, 62, 67, 70, 71, 74, 75, 78, 79, 80, 85, 87, 88, 90, 96, 155, 176, 177, 223, 579, 580
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 - Ferrites - 412
 - Lunar - 410, 641
 - Plastics - 302
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 - Tin-Sn - 443, 456, 485, 556, 603
 - Mercury-Hg - 512, 556
 - Indium-In - 556
 - Tantalum-Ta - 556, 623
 - Vanadium-V - 556
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- Manganese oxide-MnO - 583
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- Indium arsenide-InAs - 553, 597, 598
- Indium phosphorus-InP - 553, 597, 598
- Gallium arsenide-GaAs - 596, 597
- Bismuth-Bi - 463, 531

b. Impurity effects

- Germanium-Ge - 442, 497, 507

c. Magneto plasma effects

- Indium antimonide-InSb - 550
- Bismuth-Bi - 463, 531
- Cd_xH_{1-x}Te - 577

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- Bismuth-Bi - 498

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Growth of Far Infrared Research

On the following page is presented a bar graph depicting the growth of far infrared research as indicated by the papers in this bibliography. The papers before 1920 are predominantly the work of Rubens and coworkers. The papers before 1900 do not contain much far infrared work, but are included in the bibliography for historical interest. Consequently, the graph is deceptive before 1900.

